



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/891,760   | 06/25/2001  | Chuang-Chia Lin      | ONX-121             | 1002             |
| 27652  | 7590        | 06/07/2004           | EXAMINER            |                  |
| JOSHUA D. ISENBERG<br>204 CASTRO LANE<br>FREMONT, CA 94539 |             |                      | PATEL, TULSIDAS C   |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2839                |                  |

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/891,760

Applicant(s)

LIN, CHUANG-CHIA

Examiner

T. C. Patel

Art Unit

2839

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 4/30/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46-49 is/are allowed.
- 6) ☒ Claim(s) 1, 11-17, 24, 26, 29-31, 38, 40-45 and 50-55 is/are rejected.
- 7) ☒ Claim(s) 2-10, 18-23, 25, 27, 28, 32-37, 39 and 56-61 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *General Status*

1. This is a Third Non-Final Action on the Merits. Claims 1-61 are pending in the case.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 11-17, 24, 26, 29-31, 38, 40-44 and 50-55 are rejected under 35 U.S.C. § 102(e) as being anticipated by Anderson et al. (US 6,600,591).

For claims 1, 15, 29 and 50, Anderson et al. in figure 1, discloses a method of reducing stiction in MEMS device comprising a moveable element 112 coupled to a substrate 104, the method comprising providing the substrate with an anti-stiction member 120a, 120b, and interposing the anti-stiction member between the movable member and the substrate. For claim 11, the area of contact being a point or line, the method also minimizes the area of contact between the movable member 112 and the anti-stiction member 120a. For claims 12-14, 24 and 38, a portion of the substrate is electrically isolated from the mirror and also an

Art Unit: 2839

insulating material 112 is placed between the anti-stiction member 120a, 120b and electrically conductive portion 116 of the moveable member and also the substrate 104. For claims 15 and 29, the moveable member 112, the substrate 104 and the anti-stiction members 120a, 120b are disclosed in figures 1A-1C. For claims 16, 17, 30, 31, 54 and 55, the anti-stiction member is attached to the substrate and is not attached to the moveable member. For claim 26, a portion 112 of moveable member is electrically insulated. For claims 41-43, 51, 52, 53, mirror 116 deflects/reflects light. For claim 44, the mirror is able to rotate (figures 1A and 1B). For claim 50, the mirror arrangement forms a switch.

4. Claims 1, 11-17, 24, 26, 29-31, 38, 40-45 and 50-55 are rejected under 35 U.S.C. § 102(e) as being anticipated by Miles (US 6,674,562).

For claims 1, 15, 29 and 50, Miles in figures 1 and 2, discloses a method of reducing stiction in MEMS device comprising a moveable element 100 coupled to a substrate 106, the method comprising providing the substrate with an anti-stiction member 108, and interposing the anti-stiction member between the movable member and the substrate. For claim 11, the area of contact being a line, the method also minimizes the area of contact between the movable member 100 and the anti-stiction member 108. For claims 12-14, 24 and 38, a portion of the substrate is electrically isolated from the mirror by providing insulating posts 104 as well as insulating material 206 (figure 2C) at the bottom of the movable member 100, the insulating material 206 being between a portion of the substrate and the electrically conductive portion 214 (figure 2C) of the moveable member. For claims 15 and 29, the moveable member 100, the substrate 106 and the anti-stiction member 108 is disclosed in

Art Unit: 2839

figures 1A-1B. For claims 16, 17, 30, 31, 54 and 55, the anti-stiction member is attached to the substrate and is not attached to the moveable member. For claim 26, a portion 206 (figure 2C) of moveable member is electrically insulated. For claims 41-43, 51, 52, 53, mirror 100 deflects/reflects light. For claims 44 and 45, the mirror is able to rotate (figure 1B0 and translate (figure 3C). For claim 50, the mirror arrangement forms a switch.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 6,600,591) in view of Lin (US 6,215,921).

As discussed above, Anderson et al. satisfies the limitations of claim 29. However, Anderson et al. does not disclose the moveable element having translational movement. Lin, in figure 7, disclose a moveable member having translational movement, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use moveable member with translation movement, so as to have effective displacement of the moveable member.

***Allowable Subject Matter***

7. Claims 2-10, 18-23, 25, 27, 28, 32-37, 39 and 56-61 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and subject to 112, second paragraph rejection.

8. Claims 46-49 are allowed.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1-61 have been considered but are not persuasive.

The applicant amended claims 35, 36, 43 and 52, hence the Examiner has withdrawn the 35 USC , 112, second paragraph rejection. The Examiner has maintained the previous rejection on the merits and also has added rejection based on Miles. Since the Examiner has added 35 USC 102 rejection for claim 45, in place of 35 USC 103 rejection, the rejection is made Non-Final.

The applicant has argued the meaning of the term “interposable” and hence the Examiner has withdrawn the 35 USC 112, rejection. The Miles reference in column 5, lines 40-44; column 6, lines 14-20 clearly indicates the purpose of providing the bumps 108. Also, in column 6, line 10-12, indicates that the bump reduces the contact area between the substrate and the movable element. Since this is a physical property associated with providing bump post between the movable element and a substrate, providing bump or post in Anderson et al.

(having similar operating characteristics) will also serve as anti-stiction member and also will reduce the contact area between the mirror and the substrate.

10. The prior art made of record and not relied upon is considered pertinent to applicant's invention.

The examiner has cited reference of Little et al. (US 6,639,572) which in figure 6, discloses providing anti-stiction member 132 on the substrate(see column 10, lines 53-60). The reference of Miller et al. (US 6,538,798),provides bumps 524 on the mirror, which acts as anti-stiction member (see column 5, lines 42-55) and the reference of Flanders et al. (US 6,341,039) discloses roughing the surface of the movable element and/or substrate (column 11, lines 1-10). Also, reference of Nahum et al. (US 6,668,109) suggests providing ant-stiction coating and/or dimples on the substrate (column 9, lines 22-27).

Applicant also should consider these references in response to this office action. Should issue arise concerning the rejection presented above, these references may be relied upon in a subsequent action to support the lack of novelty or obviousness of claimed subject matter to one of ordinary skill in the art.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. C. Patel whose telephone number is (571) 272-2098. The examiner can normally be reached on 6:30-4:00.

Art Unit: 2839

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571) 271-2092. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



T. C. Patel  
Primary Examiner  
Art Unit 2839

Tcp  
June 1, 2004